

Draft Existing Use Determination and Rationale:

Mill Creek (Cecil County)

June 2, 2020

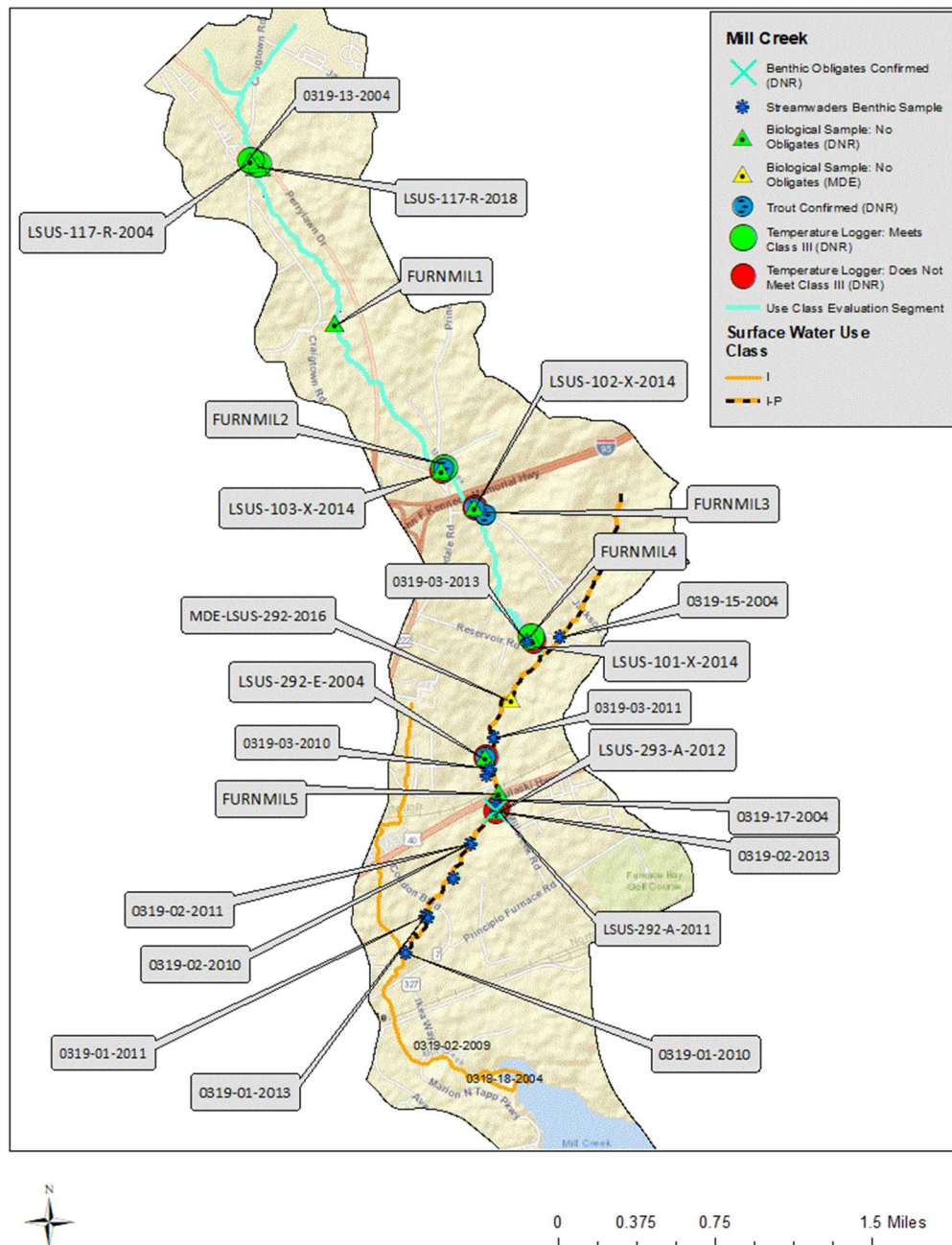
Description of Setting and Data Sources

Mill Creek and its tributaries (12-digit 021306091137) are located in the Furnace Creek watershed near Perryville, MD. It is currently designated as a Use Class I-P water. The waterbody segment currently supports naturally reproducing populations of brown trout. The MDDNR Fisheries Program and MBSS scientists, and Stream Waders volunteers conducted surveys of this waterbody segment. Figure 1 and 2 below show the location and sampling stations of the waters being evaluated. The water temperature and biological data results are provided in Tables 1 through 4. These data confirm that the section upstream of a confluence near Reservoir Road [39.585249 °N, -76.052864 °W] has a different designated use class than the section downstream of this confluence. Therefore, to determine the existing uses at an appropriate level of specificity, this document examines the segments upstream and downstream of this confluence separately. The final existing use determination and designated use class changes are shown in Figure 3.

Mill Creek Existing Use Determination (Upstream of a confluence near Reservoir Road)

Biological and temperature data are available for Mill Creek upstream of the confluence near Reservoir Road. Data show that Use Class III temperature criteria are being attained and this stream section provides habitat for a naturalized reproducing brown trout population.

Figure 1: Mill Creek (Upstream of a confluence near Reservoir Road)



Temperature Data for Mill Creek (Upstream of a confluence near Reservoir Road)

Water temperature data were collected at seven sampling stations in this section of Mill Creek. Four of these stations meet the Class III water temperature criterion.

Table 1. Mill Creek Temperature Logger Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2018	LSUS-117-R-2018	Mill Creek	MDDNR MBSS	6624	3%	0%	17.3	20.8
2014	LSUS-102-X-2014	Mill Creek	MDDNR MBSS	6624	16%	0%	18.6	23.28
2014	LSUS-103-X-2014	Mill Creek	MDDNR MBSS	6624	14%	0%	18.52	22.44
2014	LSUS-101-X-2014	Mill Creek	MDDNR MBSS	6624	29%	0%	19.1	23.14
2004	LSUS-117-R-2004	Mill Creek	MDDNR MBSS	4967	5%	0%	16.99	22.14
2003	FURNMIL2	Mill Creek	MDDNR Fisheries Program	2190	9%	0%	17.77	22.26
2003	FUNRMIL4	Mill Creek	MDDNR Fisheries Program	2190	6%	0%	17.83	20.94

*Water temperature logger data assessed from June to August. The “Daily Max” represents the maximum temperature from June to August.

Biological Data for Mill Creek (Upstream of a confluence near Reservoir Road)

Brown trout were observed during 13 biological sampling events in this section of Mill Creek (Level 3 data) and multiple year classes of brown trout and young-of-year were observed several times

There was 1 MDDNR Stream Waders sampling event (Level 2 data) that occurred in 2004. This sampling event did not yield any coldwater obligate benthic macroinvertebrate species. Unless otherwise noted, benthic data submitted by MDDNR Stream Waders was identified to family level.

Table 2. Mill Creek Biological Data

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
6/14/2018	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	1	Adult
6/14/2018	FURNMIL2	Mill Creek	MDDNR Fisheries Program	brown trout	1	YOY
6/14/2018	FURNMIL1	Mill Creek	MDDNR Fisheries Program	-	-	-
9/4/2013	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	3	Multiple Year Classes with YOY
8/2/2011	FURNMIL2	Mill Creek	MDDNR Fisheries Program	-	-	-
8/1/2011	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	9	Multiple Year Classes of Adults
9/3/2009	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	5	Multiple Year Classes with YOY
8/26/2008	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	6	Multiple Year Classes with YOY
8/14/2007	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	4	Multiple Year Classes with YOY
8/25/2004	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	9	Multiple Year Classes with YOY
8/25/2004	FURNMIL2	Mill Creek	MDDNR Fisheries Program	brown trout	1	Adult
6/26/2001	FURNMIL3	Mill Creek	MDDNR Fisheries Program	brown trout	5	Multiple Year Classes with YOY
6/26/2001	FURNMIL4	Mill Creek	MDDNR Fisheries Program	-	-	-
6/25/2001	FURNMIL2	Mill Creek	MDDNR Fisheries Program	brown trout	12	Multiple Year Classes with YOY
6/25/2001	FURNMIL1	Mill Creek	MDDNR Fisheries Program	-	-	-
7/23/2014	LSUS-101-X-2014	Mill Creek	MDDNR MBSS	-	-	-
7/23/2014	LSUS-102-X-2014	Mill Creek	MDDNR MBSS	brown trout	2	Multiple Year Classes of Adults
7/29/2014	LSUS-103-X-2014	Mill Creek	MDDNR MBSS	brown trout	6	Multiple Year Classes with YOY

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
7/26/2004	LSUS-117-R-2004	Mill Creek	MDDNR MBSS	-	-	-
4/24/2004	0319-13-2004	Mill Creek	MDDNR Stream Waders	-	-	-

*YOY - young-of-year

DNR Fish Stocking

The Eastern Regional Manager of the Maryland Department of Natural Resources Freshwater Fisheries program has stated that Mill Creek has not been stocked with brown trout in 25 years. The observed brown trout population is self-sustaining and not the result of recent stocking.

Existing Use Determination and Rationale for Mill Creek (Upstream of a confluence near Reservoir Road)

Current Use Class: Class I-P

Existing Use Determination: Mill Creek, from the confluence near Reservoir Road [39.585249 °N, -76.052864 °W] upstream to and including all headwaters, supports naturalized self-sustaining brown trout. This portion of Mill Creek has water temperatures that have a 90th percentile below 20°C, an average daily mean below 20°C, and daily max below 24°C, consistent with Class III-P criteria.

Is this Existing Use Determination Consistent with the Current (March 2020) Designated Use Class? **No.** The existing use of this segment of Mill Creek, as described above, requires that water temperatures remain significantly colder than the water quality criterion established to protect the current use class (Class I-P) designation. As a result, the existing use of this segment of Mill Creek requires protections to maintain the cold water temperatures currently found in this tributary and different than those afforded by the current use class designation of I-P.

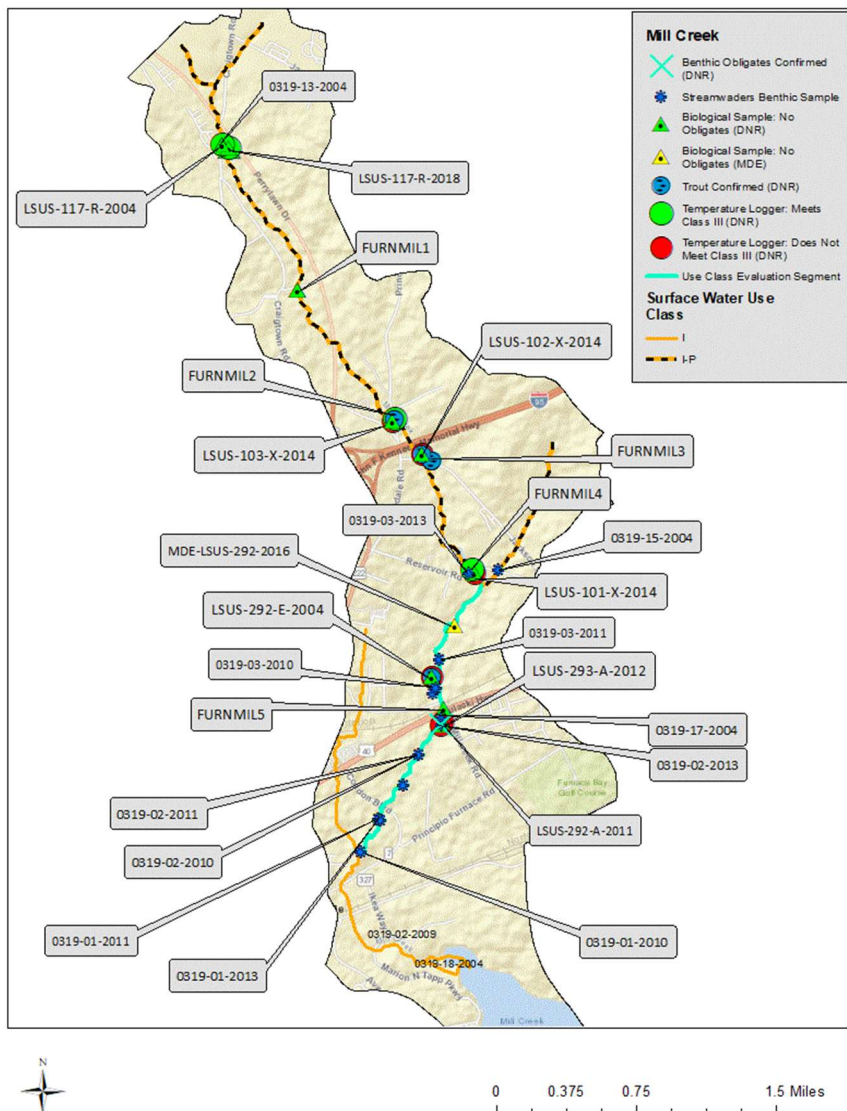
Changes Proposed to the Currently Designated Use Class: The Department recommends that the portion of Mill Creek upstream of the confluence near Reservoir Road [39.585249 °N, -76.052864 °W] be redesignated to Class III-P.

Rationale for the Existing Use Determination: The portion of Mill Creek upstream of the confluence near Reservoir Road [39.585249 °N, -76.052864 °W] demonstrated attainment of the Use Class III-P temperature criterion at FURNMIL2, FURNMIL4, LSUS-117-R-2018, and LSUS-117-R-2004. The biological data has demonstrated the existence of naturalized self-sustaining brown trout extending throughout this section of Mill Creek.

Mill Creek Existing Use Determination (Downstream of a confluence near Reservoir Road)

Biological and temperature data are available for Mill Creek downstream of the confluence near Reservoir Road. Data show that Use Class III temperature criteria are not being attained. However, the naturalized reproducing brown trout habitat extends downstream to this section. Furthermore, the presence of cold water obligate benthic macroinvertebrates has been confirmed in this section of Mill Creek.

Figure 2: Mill Creek (Downstream of a confluence near Reservoir Road)



Temperature Data for Mill Creek (Downstream of the confluence near Reservoir Road)

Water temperature data were collected at three sampling stations in this section of Mill Creek. None of these data meet the Class III water temperature criterion.

Table 3. Mill Creek Temperature Logger Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2012	LSUS-293-A-2012	Mill Creek	MDDNR MBSS	6624	71%	6%	20.97	25.94
2011	LSUS-292-A-2011	Mill Creek	MDDNR MBSS	6624	75%	9%	21.25	26.5
2004	LSUS-292-E-2004	Mill Creek	MDDNR MBSS	5975	32%	0%	19.04	22.63

*Water temperature logger data assessed from June to August. The “Daily Max” represents the maximum temperature from June to August.

Biological Data for Mill Creek (Downstream of a confluence near Reservoir Road)

One young-of-year brown trout was collected during a 2014 MBSS sampling event (station ID LSUS-292-2004). Furthermore, the MDDNR MBSS identified the coldwater obligate benthic macroinvertebrate species *Sweltsa* in a preserved sample from a 2011 sampling event (station ID LSUS-292-A-2011). This 2011 sampling event (located near Route 40 Pulaski Highway) was the most downstream evidence of cold water obligate species. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species.

There were 11 MDDNR Stream Waders sampling events (Level 2 data) that occurred in 2004, 2010, 2011 and 2013. These sampling events did not yield any coldwater obligate benthic macroinvertebrate species. Unless otherwise noted, benthic data submitted by MDDNR Stream Waders was identified to family level.

Table 4. Mill Creek Biological Data

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
6/26/2001	FURNMIL5	Mill Creek	MDDNR Fisheries Program	-	-	-
2016	MDE-LSUS-292-2016	Mill Creek	MDE Field Service	-	-	-
7/3/2012	LSUS-293-A-2012	Mill Creek	MDDNR MBSS	-	-	-

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
6/7/2011	LSUS-292-A-2011	Mill Creek	MDDNR MBSS Supplemental	<i>Sweltsa</i>	1	-
8/23/2004	LSUS-292-E-2004	Mill Creek	MDDNR MBSS	brown trout	1	YOY
4/24/2004	0319-17-2004	Mill Creek	MDDNR Stream Waders	-	-	-
4/24/2004	0319-15-2004	Mill Creek	MDDNR Stream Waders	-	-	-
4/28/2013	0313-03-2013	Mill Creek	MDDNR Stream Waders	-	-	-
4/28/2013	0319-02-2013	Mill Creek	MDDNR Stream Waders	-	-	-
4/28/2013	0319-01-2013	Mill Creek	MDDNR Stream Waders	-	-	-
4/9/2011	0319-03-2011	Mill Creek	MDDNR Stream Waders	-	-	-
4/9/2011	0319-02-2011	Mill Creek	MDDNR Stream Waders	-	-	-
4/9/2011	0319-01-2011	Mill Creek	MDDNR Stream Waders	-	-	-
4/28/2010	0319-03-2010	Mill Creek	MDDNR Stream Waders	-	-	-
4/28/2010	0319-02-2010	Mill Creek	MDDNR Stream Waders	-	-	-
4/28/2010	0319-01-2010	Mill Creek	MDDNR Stream Waders	-	-	-

*YOY - young-of-year

Existing Use Determination and Rationale for Mill Creek (Downstream of a confluence near Reservoir Road)

Current Use Class: Class I and I-P

Existing Use Determination: Mill Creek, from the confluence near Reservoir Road [39.585249 °N, -76.052864 °W] downstream to the confluence with Coudon Creek [39.564602°N - 76.065045°W], supports coldwater obligate species (*Salmo trutta* and *Sweltsa*) and water temperatures that have an average daily mean temperature below 21.25°C, a daily maximum of

less than 26.5°C, stays below 24°C for at least 90% of the time and stays below 20°C for at least 25% of the time.

Is the Existing Use Determination Consistent with the Current (March 2020) Designated Use Class? **No** The existing use of this section of Mill Creek, as described above, requires that water temperatures remain significantly colder than the water quality criterion established to protect the current use class (Class I and I-P) designation. As a result, the existing use of this section of Mill Creek requires protections to maintain the coldwater temperatures currently found in this tributary and different than those afforded by the current use class designation of I and I-P.

Changes Proposed to the Currently Designated Use Class: Though it is clear that the designated use class of this section of Mill Creek should be revised to reflect and be protective of the existing use, presence of cold water obligates, current temperature data do not support the re-designation of this section of Mill Creek to Class III or III-P without conducting a use attainability analysis (UAA). Since Maryland is in the process of redefining Class IV (or IV-P) and potentially developing a new ‘cool water’ use class as part of the work of the Cold Water Advisory Committee, it is not prudent to redesignate this section of Mill Creek at this time. Instead, and until Maryland conducts either a UAA or establishes new definitions for Class IV and a cool water use class, MDE will formally recognize this section of Mill Creek as having an existing use that is different than its current designated use class.

Rationale for the Existing Use Determination: Only one young-of-year brown trout was collected in this section of Mill Creek. Nevertheless, this one observation is evidence that the self-sustaining trout extend downstream of the confluence into this section of Mill Creek. The presence of a cold water benthic macroinvertebrate adds further evidence that the cold water obligate existing use extends downstream of the confluence.

Since none of the water temperature data collected downstream of the confluence meet the Class III temperature criteria, the State cannot justify redesignating any portion of this section of Mill Creek to Class III-P without further improvements in water temperature or conducting a UAA. MDE will be coordinating with stakeholders to refine the current Designated Use Classification structure to include a ‘cool water’ use class. The area downstream of the confluence may support a redesignation to this conceptualized ‘cool water’ use. However since this effort has not yet commenced, the State plans to protect this stream with the protections under Tier I Antidegradation Policy until those regulations are properly revised and/or developed.

Figure 3 shows the extent of the existing use determination and proposed changes to the designated use class.

Figure 3: Final Existing Use Determination and Resignation for Mill Creek

